CLAIMS

We Claim:

1. A method for operating a switch in a communication system according to a quality of service (QOS) metric, the method comprising:

receiving a data frame containing content;

comparing of the content with a template;

determining whether at least a portion of the content of the data frame matches a supplied template;

assigning a QOS score to the data frame based on the determination; and

transmitting the data frame into a queue entry, wherein the queue entry is associated with a priority relative to other queue entries.

2. The method of claim 1 further comprising:

providing a plurality of template registers; and

storing a template in each template register,

wherein each template is associated with a particular QOS level.

3. The method of claim 1 wherein the QOS score is based upon an FC-4 type of the data frame.

4. The method of claim 1 wherein the QOS score is based upon an FC-4 type specific operation of the data frame.

5. The method of claim 1 wherein said assigning a QOS score to the data frame includes:

establishing an initial score for the data based on the content of the data; and

adjusting the initial scores with one or more alternative score components to determine one or more adjusted scores.

6. A method for assigning a quality of service (QOS) level to frames for selective transmission through a switch, comprising:

for each frame:

receiving the frame;

evaluating a content of the frame;

assigning a QOS score to the frame;

identifying a receiving port for the frame;

selecting a frame having a highest QOS score; and

transmitting said selected frame through the switch.

7. The method of claim 6 wherein receiving the frame comprises receiving the frames in any order.

8. The method of claim 7 wherein evaluating a content of said frame includes assigning an initial score to each frame using at least one quality of service value.

9. The method of claim 6 further comprising:

providing a plurality of template registers; and

storing a template in each template register,

wherein each template is associated with a particular QOS score.

10. The method of claim 9 wherein the step of evaluating the content of the frame comprises comparing the content to each template to determine a match.

11. The method of claim 10 wherein the QOS score is based upon an FC-4 type of the data frame.

12. The method of claim 10 wherein the QOS score is based upon an FC-4 type specific operation of the data frame.

13. A fibre channel switch, comprising:

a plurality of input/output (I/O) ports;

a switching element programmably coupling a first of the I/O ports with a second of the I/O ports;

a first register coupled to the first I/O port and sized to hold at least one metadata field from data in the first I/O port;

a second register configured to hold a template;

a comparator coupled to the first and second registers to determine when the metadata held in the first register matches the template held in the second register; and

means for associating a quality of service value with the frame based upon the metadata matching the template held in the second register.

14. The switch of claim 13 wherein the at least one metadata field is associated with a port ID of the second I/O port.

15. The switch of claim 13 wherein the at least one metadata field is associated with an FC-4 frame type identifier.

16. The switch of claim 13 wherein the at least one metadata field corresponds to a destination port ID.

17. The switch of claim 13 further comprising a timer coupled to time how long each data frame is held in the I/O port.

18. The switch of claim 13 further comprising an application programming interface coupled to the means for associating a quality of service level to supply the quality of service value to external application software.

19. A communication system, comprising:

a plurality of network devices, each device having a node for communicating with external devices;

a switch having a plurality of input/output (I/O) ports;

a communication path coupling each of the plurality of nodes to one of the I/O ports of the switch;

a switching element within the switch operable to programmably couple a selected source I/O port with a selected destination I/O port;

a first register coupled to the selected source I/O port and sized to hold at least one metadata field from data in the selected source I/O port;

a second register configured to hold a template;

a comparator coupled to the first and second registers to determine when the metadata held in the first register matches the template held in the second register; and

means for associating a quality of service value with the frame based upon the metadata matching the template held in the second register.

20. The system of claim 19 wherein the first and second registers, the counter, and the comparator are located within the selected source I/O port.

21. The system of claim 19 wherein the first and second registers, the counter, and the comparator are located within the selected destination I/O port.

22. The system of claim 19 wherein the at least one metadata field is associated with a port ID of the selected destination I/O port.

23. The system of claim 19 wherein the at least one metadata field is an FC-4 frame type identifier.